भारतीय मानक
Indian Standard

IS 13871 : 2021

पाऊडर लेपन — विशिष्टि

(पहला पुनरीक्षण)

Powder Coating — Specification

(First Revision)

ICS 25.220.50

© BIS 2021

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुरशाह ज़फर मार्ग, नई दिल्ली – 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI-110002
www.bis.gov.in www.standardsbis.in

October 2021 **Price Group 4**

Paints, Varnishes and Related Products Sectional Committee, CHD 20

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Paints, Varnishes and Related Products Sectional Committee had been approved by the Chemical Division Council.

This Indian Standard was originally published in 1993. The material is normally intended for protection and decoration of mild steel, aluminium, galvanized metal parts and components used in various industries, such as domestic appliances, automobile, two wheeler, light and heavy industrial, electrical segments. It covers the various compounds, for example, epoxy, epoxy polyester, polyester/TGIC and polyurethane powders. Epoxy and epoxy polyester grade powders are meant for interior use while polyester/TGIC based powders are suitable for exterior exposure conditions. For surface treatment various options like shot blasting (for thick metal parts), zinc or iron phosphating, chromatizing etc. shall be employed depending on the nature of parts prior to application of powder coatings.

Revision of this Indian Standard has been taken up with a view to incorporate the limit of lead restriction. Taking cognizance of the fact that lead exposure of human being, particularly children in residential premises is injurious to health having adverse impact on human health and safety, the committee felt the need to introduce lead restriction in all paint standards likely to be used for household and decorative purposes. The technical committee responsible for formulation of this standard observed that in practice this paint is used for coating of domestic appliances, automobile and two wheeler components etc. and presence of lead compound in this product may adversely affect human health.

For manufacturing powder coatings, both synthetic and naturally occurring extenders/fillers along with pigments are used as a part of the constituents. Lead containing raw materials shall not be used deliberately in such formulation except the trace amount that may come from impurities. So it is technologically feasible to formulate this product with very low level of lead. Therefore, in this standard, lead restriction up to a maximum permissible limit of 90 ppm has been stipulated keeping in view of the fact that powder coated objects and domestic appliances etc. are used in consumer homes where the possibility of lead exposure to children cannot be ruled out. Lead is a proven mental growth retardent and small children are more susceptible to the adverse impact of lead toxicity. Since common people are not aware of the long term consequences of lead exposure on human health therefore, in this revision, along with lead restriction, a suitable cautionary notice has been included in the marking clause.

Besides incorporation of limit of lead restriction, two more grades; Grade D and Grade E have been introduced to widen the scope of the standard. Further, clause for preparation of test panel has been incorporated. The recommendatory clause for powder coating application recommendation has also been incorporated. The requirement of protection against corrosion in older version of standard has been modified as resistance to humidity and salt spray.

The composition of the technical committee responsible for formulation of this standard is given in Annex D.

A scheme for labelling environment friendly products to be known as ECO Mark is being introduced at the instance of the Ministry of Environment, Forests and Climate Change (MEF&CC). The ECO Mark shall be administered by the Bureau of Indian Standards (BIS) under the *BIS Act*, 2016 as per the Resolution No. 71 dated 20 February 1991 published in the Gazette of the Government of India. For a product to be eligible for ECO Mark it shall also carry Standard Mark of BIS for quality besides meeting additional environment friendly (EF) requirements. The criteria for ECO Mark for powder coating have been included in this standard as optional requirements.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

POWDER COATINGS — SPECIFICATION

(First Revision)

1 SCOPE

This standard prescribes requirements, methods of sampling and test for thermosetting powder Coatings.

2 REFERENCES

The Indian Standards given in Annex A contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards.

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 1303 and the following shall apply.

3.1 Volatile Organic Compounds (VOC) — It is defined as the total volatile matter content minus the water content.

4 GRADES

The material shall be of five grades depending upon its finish as given below:

a) Grade A — Glossy finish,
b) Grade B — Semi-glossy finish,
c) Grade C — Matt finish,
d) Grade D — Structure finish, and
e) Grade E — Texture finish.

5 PREPARATION OF TEST PANELS

5.1 The type and number of test panels to be used, application dry film thickness etc. including the criteria for evaluation shall be defined and shall be mutually agreed upon by the purchaser and the seller.

5.2 Preparation of Test Panels

5.3 Powder Application Recommendations

Application voltage	60-100 KV
Stoving schedule	180°-200 °C (Effective metal temperature) for 10 to 15 min

It is essential that the compressed air used completely filtered to remove contamination of oil, dust or water. Jigs should be clean in order to maintain good earthing. To avoid contamination, when using different colours, thorough cleaning of the appliance and recovery systems must be carried out between each colour change. Care should be taken in handling of different colours and types of powders for proper segregation. The total curing time of the film is dependent on several factors like material substrate, thickness and mass of the material and shape of the material. The effective curing time commences when the object has reached the recommended temperature.

No	Type	Thickness	Hardness (Rockwell B)	Roughness (μ)
1	Cold rolled steel (Matt)	0.6 to 1.0 mm	55-65	25-55
2	Cold rolled steel (Polished)	0.6 to 1.0 mm	55-65	15-35
3	Cold rolled steel	0.6 to 1.0 mm	55-65	< 20
4	Aluminium	1.0 mm		< 20

Metal	Process	Purpose	Recommendation
Thick parts/casting	Degreasing	To remove oil and dust from the substrate.	Alkaline degreasing.
Aluminium	Chromating	To improve anti-corrosive performance and adhesion of paint film to aluminium substrates.	Suitable chromate conversion coating.
Steel	Phosphating	To improve anti-corrosive performance and adhesion of paint film to steel substrates.	Passivated zinc phosphate (coating wt. 1.5-2.5 gm/Sq.m).

6 REQUIREMENTS

6.1 Description

The material shall be free flowing powder based on synthetic resins, hardeners, pigments, filler sand additives suitable for application by standard methods, for example, electrostatic, spraying, tribostatic spraying, fluidized bed coating, etc. It shall give a continuous, smooth and hard film when applied by one of the above methods and stoved as per schedule prescribed by the supplier. The powder application parameters will be as agreed between the supplier and the user.

6.2 Particle Size Distribution

It shall depend on the method of application, type of equipment, etc, as agreed between the supplier and the user. The particle size shall be determined as per any of the method prescribed in IS 4961 or IS 5258 or IS 7512 or IS 101 (Part 10/Sec 1).

6.3 Relative Density

It shall be within ± 3 percent of the approved sample.

6.4 The reactivity of the powder shall be as per the approved sample.

6.5 Lead Restriction

6.5.1 The material shall be tested for restriction from lead in accordance with IS 101 (Part 8/Sec 5), or by atomic absorption spectrometer or by ICP. When thus tested the material shall not contain lead or compounds of lead or mixtures of both, calculated as metallic lead exceeding 90 ppm.

6.6 The curing schedule should be followed as agreed to between the purchaser and the supplier. The cured film shall also conform to the requirements given in Table 1.

6.7 Optional Requirements for ECO Mark

6.7.1 *General Requirements*

6.7.1.1 The product shall conform to the requirements for quality and performance prescribed under **6.1** to **6.6**.

6.7.1.2 The manufacturers shall produce to BIS environmental consent from the concerned State Pollution Control Board as per the norms laid down under the *Water (Prevention and Control of Pollution) Act,* 1974, and *Air (Prevention and Control of Pollution) Act,* 1981 along with the authorization, if required under the *Environment (Protection) Act,* 1986, while applying for ECO Mark.

6.7.2 *Specific Requirements*

6.7.2.1 The material shall not contain any volatile organic compounds, when tested according to the method prescribed in IS 101 (Part 2/Sec 1) and IS 101 (Part 2/Sec 2).

6.7.2.2 The material shall not contain more than 0.1 percent as metal of any toxic elements, such as lead, cadmium, chromium (VI) when tested by the relevant atomic absorption spectroscopic methods.

6.7.2.3 The material shall be free from carcinogenic ingredients.

7 PACKING AND MARKING

7.1 Packing

The material shall be packed in suitable containers as agreed to between the purchaser and the supplier.

7.1.1 The product for ECO mark shall be packed in such packages which shall be recyclable/reusable or biodegradable. It shall be accompanied by instructions for proper use so as to maximize product performance and minimize wastage.

7.1.2 *Storage*

The powder should be stored in a cool and dry place at a temperature not exceeding 25 °C and at a relative humidity not more than 65 percent. Direct exposure of the powder to heater sunlight must be avoided. The stack height should not be more than 1 + 3 carton. The storage life of powders under above conditions will not be less than 6 months. Partially used packs should be kept in original packing under tightly sealed condition.

7.2 Marking

7.2.1 The packaged material shall be marked with the following:

a) Name of the material;
b) Indication of the source of manufacture;
c) Lead content (maximum);
d) Grade and mass of the material;
e) Batch number or lot number in code or otherwise;
f) Month and year of manufacture; and
g) Recommended stoving schedule;
h) A cautionary note as below:
    1) Keep out of reach of children.
    2) Dried film of this paint may be harmful if eaten or chewed.
    3) This product may be harmful if swallowed or inhaled.

7.2.2 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

Table 1 Requirements of Powder Coatings

(*Clauses* 6.6 *and* 9.1)

Sl No.	Characteristic	Requirement					Method of test
		Grade A	Grade B	Grade C	Grade D	Grade E	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
i)	Dry film thickness	50-60 microns unless specified otherwise				80-100 microns	IS 101 (Part 3/Sec 2)
ii)	Finish	← Smooth →					IS 101 (Part 3/Sec 4)
iii)	Gloss 60°	Above 80	10-80	Below 10	–	–	IS 101 (Part 4/Sec 4)
iv)	Scratch hardness at 3000 g	No such scratches as to show bare metal					IS 101 (3 of Part 5/Sec 2)
v)	Flexibility on 6.25 mm mandrel	No visible damage or detachment of film					IS 101 (2 of Part 5/Sec 2)
vi)	Cross cut adhesion	No visible damage or detachment of film					IS 101 (6 of Part 5/Sec 2)
vii)	Cupping test, mm	8.0 Pass	*3.0-7.0 Pass	3.0 Pass	–	–	IS 101 (4 of Part 5/Sec 2)
viii)	Impact resistance (direct/reverse), kg/cm	250 Pass	150 Pass	150 Pass	80 Pass	40 Pass	IS 101 (Part 5/Sec 3)
ix)	Resistance to following under condition of condensation for 1000 h with single coat DFT of 50-60 microns (DFT of 80-100 microns for Grade E)						
x)	a) Resistance to humidity	To pass the test					Clause 2 of IS 101 (Part 6/Sec 1)
	b) Resistance to salt spray	To pass the test				To pass at 500 h	Clause 3 of IS 101 (Part 6/Sec 1)
xi)	Resistance to boiling water 1/2 h at 100 °C	No blisters, No visible damage, change in gloss and adhesion					IS 101 (Part 7/Sec 1)
xii)	Resistance to lubricating oil, SAE 30	To pass the test					IS 101 (Part 7/Sec 2)
xiii)	Resistance to petrol	To pass the test					IS 101 (Part 7/Sec 2)
xiv)	Resistance to heat double bake schedule	No appreciable change of colour or deterioration in the mechanical properties					IS 101 (Part 7/Sec 3)
xv)	Resistance to bleeding	To pass the test					IS 101 (Part 7/Sec 4)
xvi)	Resistance to detergents	To pass the test					Annex B
xvii)	Resistance to acid/alkali	To pass the test					Annex C

*Exact value to be agreed to between the purchaser and the supplier.

7.2.3 The product for ECO mark shall also be marked with the following additional information on the containers:

a) List of identified critical ingredients in descending order of quantity, percent by mass; and

b) The criteria for which the product has been labelled as ECO mark.

8 SAMPLING

8.1 Representative samples of the material shall be drawn as prescribed in IS 101 (Part 1/Sec 1).

8.2 Criteria of Conformity

A lot shall be described as conforming to the requirements of this standard, if the test results of the composite sample satisfy all the requirements prescribed under **6**.

9 TESTS

9.1 Test shall be conducted as referred in col 8 of Table 1 and **6.1** to **6.6**.

9.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the result of analysis.

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
101	Methods of sampling and test for paints, varnish and related products:
Part 1	Test on liquid paints (general and physical)
Sec 1 : 1986	Sampling (*third revision*)
Sec 3 : 1986	Preparation of panels (*third revision*)
Part 2	Test on liquid paints (chemical examination)
Sec 1 : 1988	Water content (*third revision*)
Sec 2 : 1986	Volatile matter (*third revision*)
Part 3	Tests on paint film formation
Sec 2 : 1989	Film thickness (*third revision*)
Sec 4 : 1987	Finish (*third revision*)
Part 4	Optical test
Sec 4 : 1988	Gloss (*third revision*)
Part 5	Mechanical tests on paint films
Sec 2 : 1988	Flexibility and adhesion (*third revision*)
Sec 3 : 1988	Impact test (falling ball test) (*third revision*)
Part 6	Durability tests on paint films
Sec 1 : 1988	Resistance to humidity under conditions of condensation (*third revision*)
Part 7	Environmental tests on paint films
Sec 1 : 1988	Resistance to water (*third revision*)
Sec 2 : 1990	Resistance to liquids (*third revision*)
Sec 3 : 1990	Resistance to heat (*third revision*)
Sec 4 : 1990	Resistance to bleeding of pigments (*third revision*)
Part 8	Tests for pigments and other solids
Sec 5 : 1993	Lead Restriction test
Part 10	
Sec 1 : 2018	Particle size analysis — Laser diffraction methods
264 : 2005	Nitric acid
265 : 1993	Hydrochloric acid
266 : 1993	Sulphuric acid
376 : 1986	Sodium hydroxide, analytical reagent
1070 : 1992	Reagent grade water (*third revision*)
1303 : 1983	Glossary of terms relating to paints (*second revision*)
4961 : 1968	Determination of particle size of powders by air elutriatioin methods
5258 : 1969	Determination of particle size of powders by optical microscope method

ANNEX B

[*Table* 1, *Sl No*. (xv)]

RESISTANCE TO DETERGENTS TEST

B-1 PRINCIPLE

This method prescribes for determination of the resistance of powder coating to detergent solution in an accelerated manner.

B-2 APPARATUS

B-2.1 Container

A corrosion resistant container equipped with the means to control the solution temperature within 40 ± 1 °C and capable to maintain the liquid level of minimum 5 mm.

B-2.2 Cover

The container shall be provided with a cover to retard evaporation and to contain the test specimens completely.

B-3 TEST SPECIMENS

B-3.1 Unless otherwise specified, the test specimens shall be 100 mm × 300 mm × 0.9 mm in size and it shall be prepared as prescribed in IS 101 (Part 1/Sec 3).

B-3.2 The method of application, film thickness, curing and conditioning of the test surface shall be agreed upon by the purchaser and the supplier.

B-3.3 The backs, cut edges and those areas containing identification marks or in contact with the supports, shall be protected with suitable coating that is stable under the conditions of test.

B-4 DETERGENT SOLUTION

The composition and concentration of the detergent solution shall be agreed upon by the purchaser and the supplier. The temperature normally shall be 74 ± 1 °C.

B-5 PROCEDURE

B-5.1 Immersion

Suspend the test specimens vertically in the container so that at least one half of the surface area is submerged in the detergent solution. Separate the test specimens so that they are not in contact with any metal and should not come closer than 25 mm at any point in the bath. Replace the detergent solution with fresh detergent solution after every 168 h. If successive tests are to be correlated, use reference panels coated with a control paint.

B-5.2 Examination of Specimens

When the specimens are ready for examination, carefully remove, gently wash or dip in clean running water not warmer than the temperature of the detergent solution to remove the detergent from the surface, and then carefully dry by blowing with air or blotting with absorbent paper. During the progress of the test, examine for deterioration of the film immediately. If reimmersion is necessary, do not allow the specimen to remain out of the liquid in excess of 1/2 h, unless otherwise specified. Examine the test coating for blisters, rust and loss of adhesion. The sample will be treated as passing if no noticeable rusting developed, no loss of adhesion and not more than 8 blisters are observed.

ANNEX C

[*Table* 1, *Sl No*. (xvi)]

RESISTANCE TO ACID/ALKALI TEST

C-1 PRINCIPLE

This method prescribes for determination of the resistance of powder coatings to acid and alkali solutions in an accelerated manner for a fixed period.

C-2 APPARATUS

C-2.1 Containers

Corrosion resistant containers equipped with the means to control the solution temperature within 60 ± 1 °C and capable to maintain the liquid level of minimum 5 mm.

C-2.2 Cover

The containers shall be provided with covers to retard evaporation and to contain the test specimens completely.

C-3 TEST SPECIMENS

The test specimens shall be prepared as in **B-3.1** above.

C-4 REAGENTS

C-4.1 Hydrochloric Acid (*see* IS 265), 10 percent.

C-4.2 Nitric Acid, (*see* IS 264) 10 percent.

C-4.3 Sulphuric Acid, (*see* IS 266) 20 percent.

C-4.4 Sodium Hydroxide, (*see* IS 376) 25 percent.

C-5 PROCEDURE

C-5.1 Immersion

Suspend the test specimens vertically in the container so that at least one half of the surface area is submerged in the solutions namely nitric acid, sulphuric acid, hydrochloric acid and sodium hydroxide for a period of 12 h each. Separate the test specimens so that they are not in contact with any metal and are no closer together than 25 mm at any point in the bath. Replace the test solutions with fresh solutions after every 168 h. If successive tests are to be correlated, use reference panels coated with control paint.

C-5.2 Examination of Specimens

When the specimens are ready for transfer and/or examination, carefully remove, gently wash or dip in clean running water not warmer than the temperature of the test solution to remove the excess solution from the surface, and then carefully dry by blowing with air or blotting with absorbent paper. Examine the test coating for blisters, flaking and corrosion. The sample shall be treated as passing if there is no blistering, flaking and corrosion.

ANNEX D

(*Foreword*)

COMMITTEE COMPOSITION

Paints, Varnishes and Related Products Sectional Committee, CHD 20

Organization	*Representative(s)*
Personal Capacity	Dr Sunil Kumar Saha (***Chairman***)
Akzo Nobel Coatings India Pvt Ltd, Mumbai	Shri Kaustav Chatterjee
Automobile Industries Association, Delhi	Nomination Awaited
Asian Paints Ltd, Mumbai	Mr Rajeev Kumar Goel Dr Subrahmanya Shreepathi (*Alternate*)
Berger Paints India Ltd, Howrah	Shri Tapan Kumar Dhar Shri Swagata Chakroborty (*Alternate*)
Bharat Heavy Electricals Ltd, Tiruchirapalli	Shri K. Srinivasan Shri K. Anandababu (*Alternate*)
Central Building Research Institute, Roorkee	Dr Sukhdeo R. Karade Dr P. C. Thapliyal (*Alternate*)
Central Public Works Dept, New Delhi	Shri Amar Singh Shri M. L. Prasad (*Alternate*)
Clariant Chemicals (India) Ltd, Thane	Shri Nitin Vaidya Shri Umesh Kapoor (*Alternate*)
Consumer Unity & Turst Society (CUTS), Jaipur	Ms Keya Ghosh Shri Vijay Singh (*Alternate*)
VOICE (O)	Nomination Awaited
Directorate of Naval Architecture	Nomination Awaited
Engineers India Limited, New Delhi	Shri S. Ghoshal Shri A. Satya Sridhar (*Alternate*)
Harcourt Butler Technical University, Kanpur	Dr P. K. Kamani Dr Arun Maithani (*Alternate*)
Indian Institute of Chem Technology, Mumbai	Dr Prakash Anna Mahanwar Dr Anagha Sabnis (*Alternate*)
Indian Institute of Technology, Mumbai	Dr A. S. Khanna
Indian Paints Association, Kolkata	Shri Subroto Banerjee Dr M. B. Guha (*Alternate*)
Indian Small Scale Paint Association	Shri Mukund Hulvalkar Shri Ashok-Shreyas Pathare (*Alternate* I) Shri Nirav Raveshia (*Alternate* II)
In Personal Capacity	Shri Dhirendra Kumar
J K White Cement	Shri K. N. Pandey Shri D. D. Purohit Young Professionals: Raghunandan Prakash Nagar Hemant Sharma (*Alternate*)
Kansai Nerolac Paints Ltd, Mumbai	Dr D. Satpute Shri Manoj Somani (*Alternate*)
Meta-Chem Paints & Adhesives Pvt Ltd	Shri Biswanath Panja Shri Hemant Kulkarni (*Alternate*)

Organization	*Representative(s)*
Ministry of Defence (DGQA), Pune	Dr R. K. Upadhyay Shri S. P. Marthi (*Alternate*)
Ministry of Industry, New Delhi	Shri Nand Lal
Ministry of Defence, Department of Standardization, New Delhi	Lt Col Praveen Deo Shri V. K. Chhabra (*Alternate*)
National Test House (ER), Kolkata	Shrimati P. Natarajan Dr A. B. Mondal (*Alternate*)
Naval Materials Research Laboratory (NMRL), Thane	Dr T. K. Mahato Dr G. Gunasekaran (*Alternate*)
Office of the Micro Small & Medium Enterprises (MSME), New Delhi	Dr R. K. Bharti Shri Harpreet Singh (*Alternate*)
Paint and Coating Technologists Association, Kanpur	Shri V. N. Dubey
Pidilite Indusries Ltd, Mumbai	Shri Tapas Kumar Ray Dr Pradeep T. Gadekar (*Alternate*)
Premium Coatings & Chemicals	Nomination Awaited
Research Designs & Standards Organization, Lucknow	Shri P. K. Bala Shri K. P. Singh (*Alternate*)
Shalimar Paints Ltd, Kolkata	Shri Konar Muthu
Shriram Institute for Indl Research, Delhi	Shri A. K. Majumdar
SSPC India Chapter, Kolkata	Dr Buddhadeb Duari Shri Anil Singh (*Alternate*)
The Shipping Corporation of India Ltd, Mumbai	Shri R. Sood Shri N. K. Tripathi (*Alternate*)
BIS Director General	U. K. Das Scientist 'E' and Head (CHD) [Representing Director General (*Ex-officio*)]

Member Secretary

Shrishti Dixit
Scientist 'C' (CHD), BIS

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 2016 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc No.: CHD 20 (12396).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices: *Telephones*

Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg
NEW DELHI 110002 — 2323 7617, 2323 3841

Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi
KOLKATA 700054 — 2337 8499, 2337 8561, 2337 8626, 2337 9120

Northern : Plot No. 4-A, Sector 27-B, Madhya Marg
CHANDIGARH 160019 — 265 0206, 265 0290

Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113 — 2254 1216, 2254 1442, 2254 2519, 2254 2315

Western : Manakalaya, E9 MIDC, Marol, Andheri (East)
MUMBAI 400093 — 2832 9295, 2832 7858, 2832 7891, 2832 7892

Branches : AHMEDABAD. BENGALURU. BHOPAL. BHUBANESHWAR. COIMBATORE. DEHRADUN. DURGAPUR. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. JAMMU. JAMSHEDPUR. KOCHI. LUCKNOW. NAGPUR. PARWANOO. PATNA. PUNE. RAIPUR. RAJKOT. VISAKHAPATNAM.

Published by BIS, New Delhi